NEW SERIES VOL. XI NO. 19

ARNOLD ARBORETUM
HARVARD UNIVERSITY

BULLETIN
OF
POPULAR INFORMATION

JAMAICA PLAIN, MASS. DECEMBER 18, 1925

Of the forty-eight genera now recognized of the Pine Family (*Pinaceae*, now considered with *Taxaceae* to constitute the class *Coniferae*) sixteen are more or less successfully established in the Arboretum collections. These are Pinus, Picea, Abies, Tsuga, Pseudotsuga, Cedrus, Sciadopitys, Cryptomeria, Taxodium, Libocedrus, Thuja, Cupressus, Chamaecyparis, Juniperus, Larix and Pseudolarix. In these sixteen genera are represented all the genera of *Pinaceae* in North America with the exception of Sequoia from California, Mexico, Europe, northern Africa, with the exception of Tetraclinis, Siberia, the Caucasus, Asia Minor, Japan, with the exception of Thujopsis, and northern China. None of the *Pinaceae* from south of the Tropic of Cancer are hardy in New England.

The best perhaps of the species of these sixteen genera for general cultivation in the northeastern United States among the Pines are *Pinus Strobus* and *P. resinosa* of northeastern North America. *Pinus Strobus*, if it can be protected from the White Pine blister rust by isolating it from species of Currants and Gooseberries (Ribes), is the handsomest and most reliable Pine with leaves in clusters of five for this climate. There are handsome and interesting dwarf forms of this tree in the collection. *Pinus resinosa* is the hardiest and handsomest of the so-called Pitch Pines with leaves in two- or three-leaved clusters for cultivation either as an ornament or as a timber tree which can be grown in this part of the country. A dwarf form of the Red Pine (*P. resinosa* var. *globosa* Rehder) which was discovered in New Hampshire a few years ago and is still rare and little known in cultivation, is established in the Arboretum.

The best Spruces in the collection which have been sufficienly tested are the Rocky Mountain *Picea Engelmannii* and the Serbian *Picea omorika*. *P. Engelmannii* is one of the important introductions of the Arboretum. It is the handsomest of the North American Spruce trees and the most valuable as a timber tree of them all. At its best it is sometimes one hundred and twenty feet tall with a trunk often nine feet in diameter, frequently forming great forests up to altitudes of ten or twelve thousand feet and is widely scattered about five thousand feet through the whole Rocky Mountain system from Alaska and British Columbia to southern New Mexico and northern Arizona. This tree has been grown in the Arboretum since 1879 when seeds collected by Dr. C. C. Parry were sent here from Pike's Peak in Colorado. It has grown rapidly here where it has always been perfectly hardy and has formed narrow pyramidal heads of pale gray-green leaves. Its only drawback as an ornamental tree is the tendency of the trees to lose their lower branches, an advantage rather than a defect in a tree which will be grown more for the production of timber than for ornament. The loss of the lower branches, too, discloses the exceptionally beautiful pale gray bark tinged with red. *Picea omorika* is another of the great conifers introduced into cultivation by the Arboretum where seeds sent by the late Dr. Carl Bolle of Berlin were planted in 1881 and have now grown into handsome compact pyramids of yellow-green leaves pale below. This is the important Spruce-tree of south-eastern Europe where it forms or has formed great forests. The only drawback to this tree which has been seen in the Arboretum is the occasional destruction of the leading shoot by the insect which sometimes kills the leader of the White Pine.

Unfortunately the two Spruce trees which for years have been and are still generally planted in the northeastern part of the country, the so-called Norway Spruce of Europe (*Picea Abies* or *P. excelsa*) and the Rocky Mountain Blue Spruce (*Picea pungens*) from Colorado and eastern Utah to northern New Mexico and Wyoming, have not proved successful in the eastern states. Fifty or sixty years ago the Norway Spruce was very generally planted in southern New England where, however, it commences to fail at the top when about thirty years old and soon becomes ragged and unsightly, the leading shoot dying or failing to make a satisfactory growth and all the upper part of the tree gradually becoming thin, with the result that there is hardly a park or country place in New England where the sad spectacle of such half-dead trees cannot be seen. Easily raised from seed which is readily obtained, young plants grow rapidly, and they are therefore profitable plants for nurserymen to handle; and the public, in spite of the American experience with this tree, continues to buy it. In some of the states it is raised by state agencies and given away or sold at a nominal price, or is planted by the state in reforesting operations. Perhaps no other species of Pinaceae has produced so many dwarf forms and some of these are handsome and interesting plants.

The Colorado Blue Spruce is still one of the most popular conifers in the northern United States where it is propagated and planted in immense numbers in spite of the fact that it early loses its value as an ornamental tree. It is very hardy, is easily raised and grows rapidly. The young plants are of good shape and dense habit, their lower branches resting on the ground. For the nurseryman the Blue Spruce has everything to recommend it; the easy germination of the seeds, quick growth and unusual beauty of the young plants lead to the certainty of a quick sale. To a planter looking for something more important than a plant for a city garden or a small suburban yard this tree has certainly proved a failure. This is not surprising for *Picea pungens* growing in small groves near streams in the valleys of the Rocky Mountains long before it attains its full size is a thin, scraggy, miserable looking tree with a few short branches near the top of the stem. This tree was discovered in 1862 and was planted the following year in the Harvard Botanic Garden, and one of the plants raised at that time is still alive in the Arboretum on the southern slope of Bussey Hill where it is kept as a warning for planters who are deceived by the beauty of young plants. There is a dwarf variety of the Blue Spruce (var. *compacta* Rehder) which appeared in the Arboretum a few years ago. Like the typical form, it early becomes unsightly by the loss of many of its branches.

Of the numerous Fir trees which are growing in the Arboretum collection the two most valuable are the Japanese *Abies homolepis*, more often called perhaps *Abies brachyphylla*, and the Colorado form of *Abies concolor*. *A. homolepis* is a large tree on the mountains of central Japan with dark green leaves silvery white on the lower surface and violet purple cones. The largest specimen in the Hunnewell Pinetum at Wellesley is now nearly sixty-five feet tall with branches sweeping the ground. The Arboretum trees are smaller but already produce their handsome cones. A variety of this tree (var. *umbellata*) with green cones and rather lighter-colored leaves is also established in the Arboretum where it has grown rapidly, the largest specimen raised from seeds planted in 1881 being now nearly forty feet high. With *Abies brachyphylla* the Rocky Mountain form of the western American *A. concolor* must be placed as a satisfactory and beautiful tree. The oldest specimens in the Arboretum were raised here from seed planted in 1872 and are now from sixty-five to seventy feet high with lower branches resting on the ground and are solid masses of gray green foliage.

Among the Tsugas which have been sufficiently tried in the Arboretum the most satisfactory are the common Hemlock (*Tsuga canadensis*) of the northeastern part of the country, which is seen to advantage in the natural grove of this tree which covers the eastern and part of the northern slope of Hemlock Hill, and the Carolina Hemlock (*T. caroliniana*), the third of the great *Pinaceae* first cultivated in the Arboretum, which by many persons is considered the most beautiful tree among all the *Pinaceae* in the Arboretum collection. It is a native of the Blue Ridge, the eastern range of the Appalachian Mountains, on which it grows from southwestern Virginia to northern Georgia usually in scattered groves on the rocky banks of streams at elevations between two thousand five hundred and four thousand feet. This beautiful tree escaped the attention of the numerous botanists who first explored the southern Appalachian Mountains, and its distinct character was first noticed in 1850 by Dr. L. B. Gibbes of Charleston, South Carolina, although it was not until thirty-one years later that it was first described by Engelmann. This tree was first raised at the Arboretum in 1880 and the tallest specimen now is fully forty feet high. On the Blue Ridge it is usually not more than forty or fifty feet high, although occasionally trees up to seventy feet high occur, and the trunk has rarely a greater diameter than two feet. It is a smaller tree therefore than the northern Hemlock; the branches are more pendulous and the leaves are darker green and more lustrous than those of the northern tree. The leaves, too, are usually notched at the apex and slightly toothed, while those of the northern tree are rounded at the apex and are not notched. The two trees are best distinguished, however, by their cones; those of the southern tree are not stalked and their scales are much longer than broad with obviously pointed bracts, while those of the northern tree are stalked and the scales are about as long as wide with bracts broad and truncate at the apex. Many persons now see and admire the Carolina Hemlock in the Arboretum every year. It is still rare in cultivation, and probably ten thousand Colorado Blue Spruces are planted in this country every year for one Carolina Hemlock.

The interior region of North America has made it possible to cultivate in the eastern states a number of Pacific trees which are not hardy here when obtained from the coast. The most useful of these is the Douglas Spruce (*Pseudotsuga taxifolia*) and its dwarf varieties, and the Pacific coast Arbor Vitae (*Thuja plicata*) which collected in Idaho in 1880 has been growing here successfully ever since and is one of the beautiful *Pinaceae* of the Arboretum. Equally successful is the Japanese *Thuja Standishii* which gives every promise of becoming here a large tree with a handsome tall trunk.

The hardy form of the Cedar of Lebanon may perhaps best show the importance of the selection of trees from which to raise others for any particular climate, and the form of this tree from Asia Minor is the most important introduction of exotic trees made by the Arboretum. A comparatively short time ago it was found that this tree grows in Asia Minor on the Anti-Taurus far north of the Lebanon range in Palestine and in a much colder climate. As the Palestine Cedar had not proved hardy in New England the Arboretum had seeds of this tree collected on the Anti-Taurus with the view of introducing a hardy race of this beautiful tree into New England. The seeds were sown here in the spring of 1902 and a large number of plants were raised. They have all proved perfectly hardy and have not suffered from drought or cold. A few of them, however, have been lost in transplanting for no other tree has proved so difficult to move. The average height of these Cedars in the Arboretum is now over twenty feet, the tallest being more than thirty feet high.

Of the large collection of Junipers in the Arboretum those best worth raising here are probably *Juniperus virginiana* and its numerous varieties, the Japanese *J. rigida*, a small tree with gracefully pendulous branches, and the prostrate *J. horizontalis*, widely distributed from the coast of Maine to British Columbia, ranging south to Massachusetts, western New York, Illinois and Montana, and one of the handsomest of all prostrate Junipers, with branches hugging the ground and often extending over broad areas. The beauty and value of this plant is well shown in the Juniper collection.

The most valuable probably of the Larch trees in this climate is the common European *Larix decidua*, a better tree than the eastern American species, but it does not grow as large as the western *Larix occidentalis* which, however, has not been sufficiently tried in this climate to show its true value. A hybrid (*L. eurolepis*) between the European and the Japanese Larch (*Larix Kaempferi*) grows more rapidly than any of the species, but it is still too soon to speak of its permanent value in New England.

Pseudolarix amabilis, the so-called Golden Larch of China, is one of the handsomest and hardiest of exotic trees which can be grown in the eastern United States into which it was introduced more than sixty years ago. As long ago as 1853 it was first made known by Robert Fortune who found it grown in pots, and it was not until eleven years later that he found it growing in the open ground of a monastery in Chekiang where it had grown to a height of a hundred and twenty feet with trunks two feet in circumference up to fifty feet above the ground. This tree has never become common in Europe apparently, and it is surprising how few specimens there are in the United States large enough to bear cones. It must be placed with the Carolina Hemlock as one of the most beautiful of all the *Pinacae* in the Arboretum collection. The largest tree in the United States was imported by S. B. Parsons in 1859 and planted in his Nursery at Flushing, Long Island. The ground on which this tree is growing has recently been purchased by the City of Flushing and the tree, still in perfect health, is fully eighty feet high with a broad symmetrical pyramidal head. The Golden Larch has been growing in the Arboretum since 1871 and has been producing for several years abundant crops of seeds. Of other trees in this country large enough to produce seeds the Arboretum only knows two plants in Wellesley, Massachusetts, the trees planted by C. A. Dana, at Dosoris, Long Island, the trees in the parks at Rochester, New York, and a tree which is probably still living in the neighborhood of Cincinnati, where it was planted by the late Mr. Probasco. The common name of this tree, Golden Larch, is due to the beautiful color of the autumn foliage. The Arboretum will be glad of information of other trees in this country large enough to produce seeds.

These Bulletins will now be discontinued until the spring of next year.